

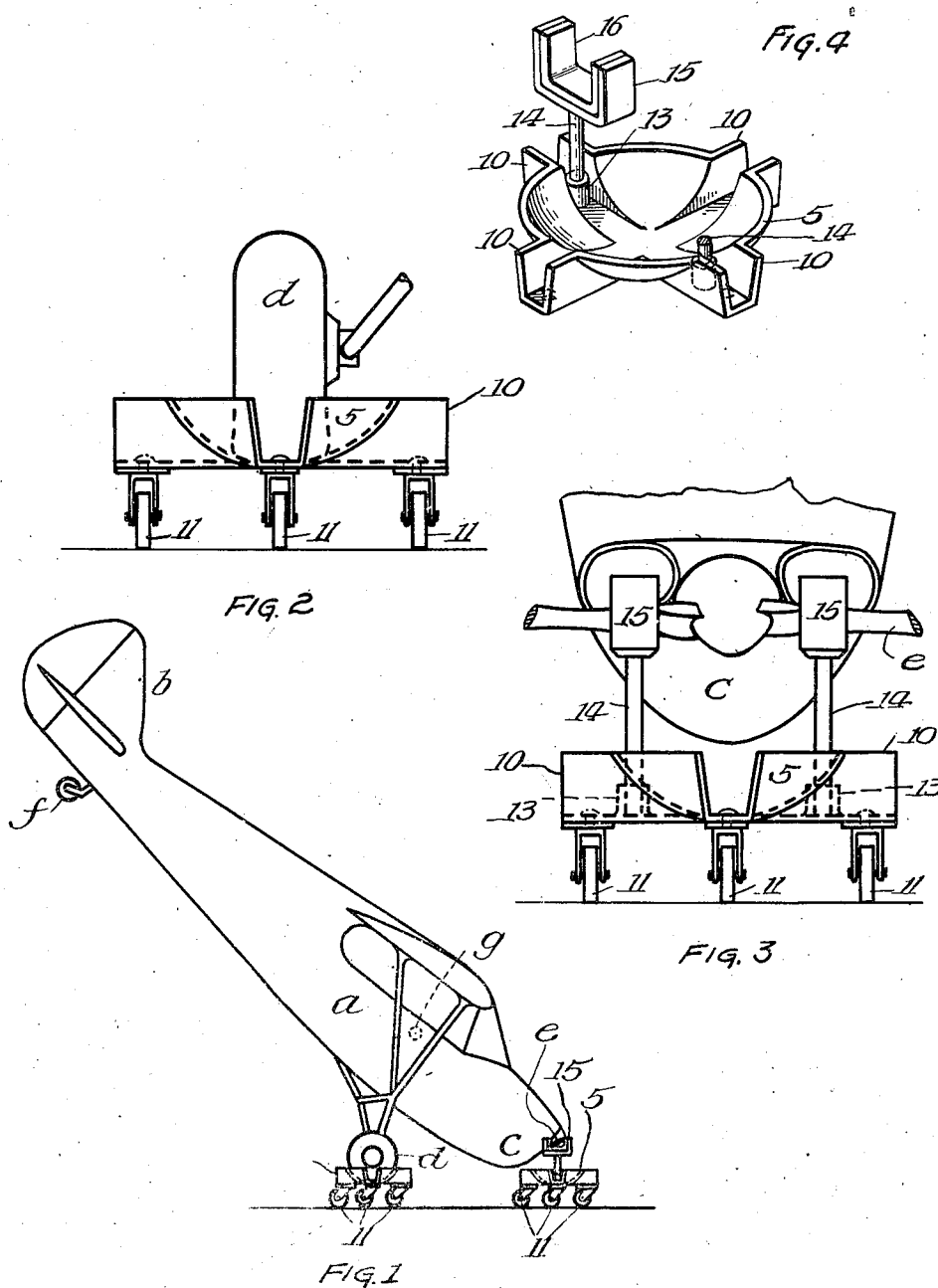
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STORING AND TRANSPORTING AIRPLANES

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STORING AND TRANSPORTING AIRPLANES

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The invention relates to the handling and storing of airplanes.

In hangars for airplanes it is desired to conserve space and to increase its capacity for storing airplanes, particularly those of the lighter type and also to provide equipment for facilitating their transportation from place to place in the hangar.

The object of the invention is to provide an apparatus for storing and handling airplanes in hangars which makes it possible to increase the capacity of the hangar by placing them in close or overlapping relation to each other and by which the movements of the airplanes in the hangar will be facilitated.

Other objects of the invention will appear from the detailed description.

The invention consists in the several novel features which are hereinafter set forth and are more particularly defined by claims at the conclusion hereof.

In the drawing: Fig. 1 is a side elevation showing the attitude of an airplane when it is supported in accordance with the invention. Fig. 2 is a front view of one of the wheeled carriers and an airplane wheel supported therein. Fig. 3 is a front elevation of one of the carriers and the front end of the airplane supported in its tilted position. Fig. 4 is a perspective of the frame of one of the carriers.

In airplanes comprising front landing wheels and tail supports for supporting the airplane on the ground, the center of gravity, when the airplane is resting on the floor or ground, is located rearwardly of the axis of the front landing wheels and the tail will normally overbalance the front end or nose of the fuselage and the parts, such as the engine, which are carried therein. The invention provides for elevating the front landing wheels and tilting the airplane on the axis of the elevated front carrying wheels to bring the center of gravity in front of the said axis a sufficient distance so that the nose or front portion of the airplane will overbalance the tail portion and for supporting the nose or front end in such position that the longitudinal axis of the body of the plane will be inclined rearwardly and upwardly to reduce the floor space necessary for the storage of the airplane. For this purpose, the invention provides a pair of wheeled carriers or cradles, each of which is adapted to be independently placed under one of the front landing wheels at the sides of the airplane and a wheeled carrier adapted to support a part of the front end or at the nose of the airplane, such as the

propeller, so the longitudinal axis of the airplane will be inclined upwardly and rearwardly and its center of gravity will be in front of the axis of the front carrying wheels so that the tail will be held elevated by the preponderance of weight at the front end. The invention is exemplified with an airplane which comprises a fuselage *a*, a tail *b*, a nose *c*, a pair of front landing wheels *d*, at opposite sides of the fuselage, a propeller *e*, and a tail-wheel *f*. The center of gravity of the airplane is indicated at *g*.

The equipment or apparatus for carrying out the invention comprises a series of three carriers which may be of similar construction. Each carrier comprises a body or frame which is provided with a spherically convex wall *5* which forms an upwardly facing pocket adapted to receive one of the landing wheels and a series of four outwardly extending integral channeled arms *10*. Each body is movably supported for transportation on the hangar floor by four caster wheels *11* which are swivelled to the outer ends of arms *10* to permit the wheels to caster horizontally through 360°. The channels of two oppositely extending arms *10* are provided with bosses *13*. A pair of upstanding rods or standards *14* are removably held in bosses *13* and are provided at their upper ends with saddles *15* for receiving the oppositely extending blades of the propeller at the nose of the airplane. These saddles are spaced apart to receive the shanks of the propeller blades. These saddles are provided with linings *16* of rubber which serve as cushions for the propeller blades. For the purpose of interchangeable use under the front landing wheels or the nose of the propeller, each carrier may be provided with bosses *13*, but it is to be understood that these bosses may, if desired, be omitted from two of the carriers.

In use, assuming the airplane to be resting on the hangar floor, one wing is lifted manually sufficiently to raise the front landing wheel *a* at the elevated side so that one of the carriers can be moved under said wheel. The wing is then lowered into the concave pocket in that carrier. The spherical convex contour of the wheel-receiving pocket in the body *10* makes it possible to receive and retain a landing wheel without accurately spotting the carrier under the wheel. Next, the other wing of the airplane is lifted sufficiently to permit the second carrier to be wheeled under it and the second front landing wheel is then dropped into the spherically concave pocket of that carrier. Next, the third carrier which carries a pair of saddles *13* is placed under

the front end or nose-portion of the airplane in position to receive the shanks of the propeller blades *b* and the tail of the airplane is manually elevated to move the center of gravity of the airplane in front of the axis of the front landing wheels. If desired a line or rope may be attached or tied to the tail-wheel to control the lowering of the nose of the plane after the center of gravity passes in front of the axis of the front landing wheels to gradually control the descent of the nose of the airplane. The third carrier is then rolled into such position that the cushioned saddles *13* will receive the propeller blades *b* without jar or likelihood of damage. When the airplane is supported in the position illustrated in Fig. 1 the plane can be bodily shifted in any direction over the floor, the castered wheels *8* permitting its movement in any angular direction over the floor. When the airplane is thus supported, the floor space occupied by it will be greatly less than that occupied by it when it is in its normal position on the floor or ground. It is then also possible to arrange the airplane closely together in a row by positioning the supporting carrier of one airplane in close proximity to, and partially under, another similarly inclined airplane. That makes it possible to greatly increase the storing capacity of the hangar. The castered wheels on each set of the three carriers make it possible to easily manipulate the upwardly tilted plane over the floor and out of or into a row. The equipment is simple in construction and facilitates the manual transportation of the plane in the hangar.

The invention is not to be understood as restricted to the details set forth, since these may be modified within the scope of the appended claims, without departing from the spirit and scope of the invention.

Having thus described the invention, what I

claim as new and desire to secure by Letters Patent is:

1. Equipment for handling airplanes comprising a pair of carriers for supporting the front landing wheels of an airplane above ground level, and a third carrier provided with a saddle for supporting, and adapted to be engaged by an element on the front end of, the airplane in a rearwardly and upwardly inclined position when the airplane is tilted longitudinally on the axis of the front landing wheels to bring its center of gravity forwardly of the axis of the landing wheels.

2. Equipment for handling airplanes comprising a pair of carriers for supporting the front landing wheels of an airplane above ground level, each provided with caster wheels, and a third carrier provided with caster wheels and a saddle for supporting, and adapted to be engaged by an element on the front end of, the airplane in a rearwardly and upwardly inclined position when the airplane is tilted longitudinally on the axis of the front landing wheels to bring its center of gravity forwardly of the axis of the landing wheels.

3. Equipment for handling airplanes comprising a pair of carriers for supporting the front landing wheels of an airplane above ground level, each carrier being provided with caster wheels and on its upper face with a spherically concave pocket for confining a wheel against lateral movement on the carrier, and a third carrier provided with caster wheels and a saddle for supporting, and adapted to be engaged by an element on the front end of, the airplane in a rearwardly and upwardly inclined position when the airplane is tilted longitudinally on the axis of the landing wheels to bring its center of gravity forwardly of the axis of the landing wheels.

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